TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT
CAISSON SEALING METHOD FOR THE S&M PROGRAM

Identification No.: RL-DD070
Date: August 2001
Program: Surveillance and Maintenance
OPS Office/Site: Richland Operations Office/ Hanford Site
PBS No.: RL-CP01
Waste Stream: LLW liquid
TSD Title: N/A
Waste Management Unit (if applicable): N/A
Facility: REDOX and PUREX

Priority Rating: This entry addresses the Accelerated Cleanup: Paths to Closure (ACPC) Priority:

____ 1. Critical to the success of the Accelerated Cleanup: Paths to Closure (ACPC)
____ 2. Provides substantial benefit to the ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
_X_ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Caisson sealing method for the S&M Program.

Need/Opportunity Category: *Technology opportunity* - the project desires an alternative to the current or planned baseline technology/process (i.e., a baseline exists but can be improved).

Need Description: There are two caissons, each with a sump and seal-pot vessel. The vessels collect water that enters them from rainfall or other natural occurrences. A technology is needed to seal the caissons to prevent water intrusion.

Schedule Requirements:
Earliest Date Required: FY 2002
Latest Date Required: Unknown.

Problem Description: There are two buried caissons that each contains a sump and a seal-pot vessel. It is believed that the negative pressure maintained within the caissons draws water from the soil into the caissons and then keeps the water from flowing out of the caissons. No water has been detected between the vessels and caisson walls; however, it is desirable to seal the caissons against possible water intrusion as the concrete ages.

Benefit to the Project Baseline of Filling Need: Monitoring, water draining and water treatment costs could be reduced or avoided.

Functional Performance Requirements: The technology must be able to seal the buried concrete caissons without loss of integrity to the caissons. If sealing is performed inside the caissons, it must be performed remotely through an 8" entry pipe and must maintain a seal in a negative pressure environment.

WBS No.	***TIP No.***
1.4.03.3.1.02.05.03 and 1.4.03.3.1.01.05.03	N/A

Relevant PBS Milestone: PBS-MC-030

Justification for Need:

Technical: A technology is needed to reduce the generation of additional radioactive waste.

Regulatory: None known.

Environmental Safety & Health: Eliminating the pumping and disposal of fluids avoids the potential for leaks to the environment.

Cost Savings Potential (Mortgage Reduction): Rough order of magnitude (ROM) life cycle cost (LCC) savings is $1M. LCC savings estimate is based on budget of $70K every three years for one caisson and a budget of $70K every 10 years for the second caisson. The S&M mission completion date is 2046 (average annual cost of $30.33K). The cost of draining and treating the water could be avoided with proper sealing of the caissons.

Cultural/Stakeholder Concerns: Water intrusion into the caissons increases the potential for a release to the environment if the negative pressure fails.

Other: None identified.

Current Baseline Technology: Monitoring for water intrusion, and draining and treating water as needed.

End User: Environmental Restoration Project

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